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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,568	07/21/2004	Rocco D. Pochy	240406172004	4567
26496	7590	02/09/2005	EXAMINER	
GREENBERG & LIEBERMAN 314 PHILADELPHIA AVE. TAKOMA PARK, MD 20912			PUNNOOSE, ROY M	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/710,568	<b>Applicant(s)</b> POCHY ET AL.	
	<b>Examiner</b> Roy M. Punnoose	<b>Art Unit</b> 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12 is/are rejected.
- 7) ☒ Claim(s) 11 and 13-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/21/2004</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Drawings*

1. Figure s 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first axis of symmetry and the second axis of symmetry must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Currently, the drawings show only an axis (3), and it is not clear if this is a different axis from the first axis and/or the second axis.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "140" and "150" have both been used to designate "holder" (see paragraphs 30 and 31).
4. The drawings are objected to because in Figures 3, 5 and 6, reference characters 40, 51, 56 and 57 are directed to the same point.
5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

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renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation of "a second principal axis" creates the perception that there exists a "first principal axis" for the second concave spherical reflective surface (which is not disclosed in the specification or claims). Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-3, 5, 7 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by

Wagner et al (US\_2004/0042008 A1).

Wagner et al (Wagner hereinafter) discloses a particle sensor 100 comprising a light detection device 326, a housing 120 (see paragraph 32) in communication with said light detection device 326 (see paragraph 39 and Figure 3) and a first concave reflective surface 317 on said housing 120, wherein said light detection device 326 is circumscribed by said housing 120, and the light detection device 326 is a photodiode (see paragraph 45), said light detection device 326 is recessed below said concave reflective surface 317, said light detection device 326 forms the center of said concave reflective surface 326, and further comprising a second reflective surface 316 having a concave shape configured to reflect light opposite said first concave reflective surface 317.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al (US\_2004/0042008 A1) in view of Foley et al (US\_2003/0058451).

Claim 4 is rejected because:

A. Wagner teaches all claim limitations as disclosed above except for the explicit disclosure that the reflective surface is gold in a device that uses light that is reflected or scattered from particles for sensing the particles.

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- B. Foley et al (Foley hereinafter) discloses the use of a reflective surface 62 that is gold (see paragraph 63) in a device that uses light that is reflected or scattered from particles for sensing the particles.
- C. In view of Foley's teachings, it would have been obvious to one of ordinary skills in the art at the time the invention was made to incorporate the use of gold on a reflective surface into Wagner's device due to the fact that a gold surface would enhance the reflectivity of the infrared wavelengths and thereby widen the wavelength range of reflectivity to improve accuracy of sensing in a device that uses light that is reflected or scattered from particles for sensing the particles.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al (US\_2004/0042008 A1) in view of Sommer (US\_4,942,305).

Claim 6 is rejected because:

- A. Wagner teaches all claim limitations as disclosed above except for the explicit disclosure that the light detection device is raised above said first concave reflective surface in a device that uses light that is reflected or scattered from particles for sensing the particles.
- B. Sommer discloses a light detection device 30a (see Figure 2) that is raised above a first concave reflective surface 16 in a device that uses light that is reflected or scattered from particles for sensing the particles.
- C. In view of Sommer's teachings, it would have been obvious to one of ordinary skills in the art at the time the invention was made to incorporate a light detection device that is raised above a first concave reflective surface into Wagner's device due to the fact that a raised detector would have less particulate build up over the detector, which will improve

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the accuracy of sensing in a device that uses light that is reflected or scattered from particles for sensing the particles.

Note: the specification does not indicate why a raised detector is critical to the invention.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al (US\_2004/0042008 A1) in view of Frommer (US\_4,422,761).

Claim 8 is rejected because:

- A. Wagner teaches all claim limitations as disclosed above except for the explicit disclosure that said reflective surface has a first focal point and a second focal point defining a first axis of symmetry in a device that uses light that is reflected or scattered from particles for sensing the particles.
- B. Frommer teaches of a reflective surface has a first focal point 51 and a second focal point 52 defining a first axis of symmetry 3 as disclosed by the applicant in paragraphs 11, 12 and Figure 2 of the instant application, in a device that uses light that is reflected or scattered from particles for sensing the particles.
- C. In view of Frommer's teachings, it would have been obvious to one of ordinary skills in the art at the time the invention was made to incorporate a first focal point and a second focal point defining a first axis of symmetry into Wagner's device due to the fact that it would provide more scattered light onto the detector to improve the accuracy of sensing in a device that uses light that is reflected or scattered from particles for sensing the particles.

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14. Claim 9 is rejected for the same reasons of rejection of claim 8 above and because Wagner teaches that the light detection device is located in the center of said first axis of symmetry (see Figure 3).

15. Claims 10 and 12 are rejected for the same reasons of rejection of claim 8 above and because Wagner teaches that a second reflective surface 316 having a concave ellipsoidal shape having a second axis of symmetry, wherein said first axis of symmetry and said second axis of symmetry are coaxial (see Figure 3).

**Note:** Since the Figures of the instant application does not show any axes of symmetry, the Examiner is assuming that the axes of symmetry for both reflective surfaces 316 and 317 (Fig.3) of Wagner is a vertical center-line that passes through the center of the detector 326 and the inlet 302.

#### ***Allowable Subject Matter***

16. Claims 11 and 13-19 are objected to as being dependent upon a rejected base claim, but would be allowable if the rejections cited above can be overcome.

17. Claims 11 and 13-19 are allowable because none of the prior art references disclose a device for sensing particles comprising a means for conducting a gas stream with small particles through a first focal point of a second reflective surface, and, a means for projecting light through said first focal point of said second reflective surface, in combination with the rest of the limitations of the respective claims.

#### ***Conclusion***

18. The prior art cited in the accompanying PTO-892 is made of record and not relied upon, **is considered pertinent** to applicant's disclosure.



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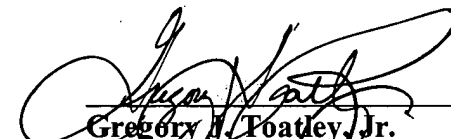
19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Roy M. Punnoose** whose telephone number is **571-272-2427**.

The examiner can normally be reached on 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Gregory J. Toatley, Jr.** can be reached on **571-272-2059**. The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**Roy M. Punnoose**  
Patent Examiner  
Art Unit 2877  
February 05, 2005



**Gregory J. Toatley, Jr.**  
Supervisory Patent Examiner  
7 Feb 05